REMARKS

Claims 1-12 and 14-21 are pending in the present Application. Claims 17, 19 and 20 have been amended, leaving Claims 1-12 and 14-21 for consideration upon entry of the present Amendment. Claim 17 has been amended to remove rubber modified poly(alkenyl aromatic) resin from the Markush group. Applicants note that rubber modified poly(alkenyl aromatic) resin as described in the specification relates to alkenyl aromatic resins modified with an unsaturated rubber. Applicants wish to explicitly note that the amendment to Claim 17 is not intended to give up any rights to an alkenyl aromatic resin modified by a saturated rubber. Claims 19 and 20 have be amended to specify the amount of poly(arylene ether), similar to Claim 1.

No new matter has been introduced by these amendments or new claims. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Objections

Claim 15 is objected to as being dependent upon a rejected base claim. Applicants thank the Examiner for this indication of allowable subject matter.

Claim Rejections Under 35 U.S.C. § 102(e) and 103(a)

Claims 19-21 stand rejected under 35 U.S.C. § 102(e), as allegedly anticipated by or, in the alternative, under 35 U.S. C. § 103(a) as obvious over United States Publication No. 2003/0130403 A1 to Geprags, et al. (Geprags). Applicants respectfully traverse this rejection.

In the Office Action dated July 14, 2008 the Examiner indicated that Claims 19 to 21 did not contain a limitation with regard to the amount of poly(arylene ether). These claims have been amended to contain the same quantitative poly(arylene ether) limitation as Claim 1. Anticipation and obviousness both require that all elements be disclosed in the cited reference. Applicants respectfully assert that amended Claims 19 to 21 are not anticipated or obvious in view of Geprags as Geprags does not teach the use of poly(arylene ether) in the currently claimed amounts as discussed in the previous response submitted to the USPTO.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-12, 14 and 16-21 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Patent No. 6,306,978 to Braat, et al. (Braat), in view of Geprags. Applicants respectfully traverse this rejection.

Claim 1 is directed to a thermoplastic poly(arylene ether) composition comprising a poly(arylene ether) having aromatic ester end groups and a component selected from the group consisting of impact modifier, reinforcing filler, flame retardant and combinations of two or more of the foregoing. The poly(arylene ether) having aromatic ester end groups is present in an amount greater than 15 weight percent based on the total weight of the composition. The impact modifier comprises a diblock copolymer, triblock copolymer, or a combination thereof. As discussed in earlier prosecution, a rubber modified alkenyl aromatic resin is not an impact modifer.

Claim 14 is a method of making a thermoplastic poly(arylene ether) composition comprising blending a mixture comprising poly(arylene ether) having aromatic ester end groups and a component selected from the group consisting of impact modifier, reinforcing filler, flame retardant and combinations of two or more of the foregoing. Like Claim 1, the poly(arylene ether) having aromatic ester end groups is present in an amount greater than 15 weight percent based on the total weight of the composition and the impact modifier comprises a diblock copolymer, a triblock copolymer, or a combination thereof.

Claim 17 is a method of making a thermoplastic poly(arylene ether) composition comprising melt blending a poly(arylene ether) with one or more capping agents selected from the group consisting of salicylic acid ester and anthranilic acid ester and a component selected from the group consisting of impact modifier, alkenyl aromatic polymers, reinforcing filler, flame retardant and combinations of two or more of the foregoing. Like Claims 1 and 14, the poly(arylene ether) having aromatic ester end groups is present in an amount greater than 15 weight percent based on the total weight of the composition and the impact modifier comprises a diblock copolymer, a triblock copolymer, or a combination thereof.

Claim 19 is a thermoplastic poly(arylene ether) composition consisting essentially of a poly(arylene ether) having aromatic ester end groups, and a component selected from the group consisting of a hydrogenated impact modifier, reinforcing filler, flame retardant and combinations of two or more of the foregoing, wherein the impact modifier comprises a diblock copolymer, a triblock copolymer, or a combination thereof and wherein the poly(arylene ether) having aromatic ester end groups is present in an amount greater than 15 weight percent based on the total weight of the composition.

Finally, Claim 20 is a poly(arylene ether) composition comprising a poly(arylene ether) having aromatic ester end groups, an impact modifier, and an alkenyl aromatic polymer, wherein the impact modifier comprises a diblock copolymer, a triblock copolymer, or a combination thereof and wherein the poly(arylene ether) having aromatic ester end groups is present in an amount greater than 15 weight percent based on the total weight of the composition.

The Examiner has taken the position that since Braat implies that capped PPE can be used in combination with polystyrene then the use of capped PPE in combination with any other component such as a flame retardant, impact modifier, or reinforcing filler is obvious as well. Applicants disagree. The underlying assumption of the Examiner's position is that if capped PPE is allegedly better when used alone or in combination with one specific component then these benefits will carry over to the combination of a capped PPE and other components. The data in Table 2 demonstrates the fallacy of this underlying assumption. Furthermore, Applicants note that Braat explicitly states at col. 7, lines 53-55, that "tensile properties are not materially affected by capping". This is also shown to be untrue in the Examples.

Examples 1 and 4 which contain only uncapped PPE demonstrate a marked decrease in tensile strength at break when aged at elevated temperatures compared to Examples 2, 3, 5, and 6 which contain only capped PPE. These comparative Examples (1-6) are present to demonstrate the relative behaviors of capped and uncapped PPE without the presence of other materials. Examples 7 and 8 contain rubber modified poly(alkenyl aromatic) resin in addition to the uncapped PPE (Ex. 7) and capped PPE (Ex. 8). Braat suggests that in compositions such as this the inclusion of capped PPE would improve performance but in fact Example 8 (capped PPE) shows a greater loss in tensile strength at break after heat aging than Example 7 (uncapped PPE). This is completely unexpected given the teachings of Braat which treat alkenyl aromatic resin and rubber modified poly(alkenyl aromatic) resin as equivalents. Example 9 uses a combination of an alkenyl aromatic resin and an impact modifier to achieve an unaged tensile strength similar to that of Examples 7 and 8. Example 9, without capped PPE, again shows a loss in tensile strength after heat aging. Surprisingly, in light of the results of Examples 7-9, Example 10 shows complete retention of tensile strength after heat aging.

Without being bound by theory Applicants believe the difference in tensile strength after heat aging found when comparing Examples 7 and 8 relates to the role of the hydroxyl groups of the uncapped PPE and the unsaturated bonds found in the rubber modified poly(alkenyl aromatic) resin. It is believed that the hydroxyl groups can function as an anti-oxidant for the unsaturated bonds, thereby reducing the overall quantity of thermo-oxidation. In contrast, the capped PPE has fewer hydroxyl groups available to function as an anti-oxidant and as a result Example 8 shows a greater decrease in tensile strength after heat aging than Example 7. Example 9 comprises polystyrene, not rubber modified polystyrene, and a hydrogenated block copolymer – a composition which has few or no in-chain unsaturated bonds. As a result Example 9 maintains tensile strength after heat aging better than Example 7. Finally, Example 10, using a combination of capped PPE, polystyrene and a hydrogenated block copolymer, shows no loss of tensile strength after heat aging.

Examples 14 to 16, containing a flame retardant, show a similar result to that demonstrated by Examples 8 to 10. Again, Example 15 uses a combination of an alkenyl aromatic resin and an impact modifier to achieve an unaged tensile strength similar to that of Example 14. Both Examples 14 and 15 show a loss of tensile strength after heat aging. In contrast, Example 16, containing capped PPE, does not show a loss in tensile strength after heat aging.

Examples 11-14 show the effect of capped PPE in a reinforced composition. Example 11, containing uncapped PPE, when compared to Example 1, shows that reinforced compositions suffer a more dramatic loss in tensile strength after heat aging than unreinforced compositions – Example 11 shows a 50% loss of tensile strength after aging at 175°C while Example 1 shows only a 23% loss. The reinforced compositions containing capped PPE (Examples 12 and 13) maintain much more tensile strength after heat aging than would be expected from comparing Examples 1 and 11.

In summary, the Examiner has asserted that since Braat teaches the advantages of capped PPE in a composition containing an alkenyl aromatic resin or a rubber modifier alkenyl aromatic resin then it is obvious to use a capped PPE in any PPE composition. As shown in the Examples, capped PPE does not have advantages over uncapped PPE in all compositions, despite the teachings of Braat. Furthermore, it is shown that in compositions containing a component selected from the group consisting of impact modifier, reinforcing filler, flame retardant and combinations of two or more of the foregoing, the use of a capped PPE is surprisingly advantageous.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996). Applicants respectfully assert that the is no suggestion or incentive in Braat or Geprags to use an impact modifier, reinforcing filler or flame retardant in combination with a capped PPE. Furthermore, even if a prima facie case of obviousness were conceded, which it is not, it is respectfully submitted that applicant's invention is not obvious because the particular combination of claimed elements results in unexpectedly beneficial properties. An applicant can rebut a prima facie case of obviousness by presenting comparative test data showing that the claimed invention possesses unexpectedly improved properties or properties that the prior art does not have. *In re Dillon*, 919 F.2d 688, 692-93, 16 U.S.P.Q.2d 1987, 1901 (Fed. Cir. 1990). Reconsideration and withdrawal of this rejection are respectfully requested.

Nonstatutory Double Patenting Rejections

Claims 1-12, 14 and 19 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-46 of United States Patent No. 7,119,136 and Claims 1-47 of United States Patent No. 7,101,923.

Applicants thank the Examiner for pointing out the potential obviousness-type double patenting issue between the claims of the present application and those of United States Patent Nos. 7,119,136 and 7,101,923. In view of the possibility that claims in the present application will be further amended before allowance, Applicants will defer responding to this rejection until claims in the in the present application are otherwise allowable.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the objection(s) and rejection(s) and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 50-1131.

Respectfully submitted,

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